WHAT IS CLAIMED IS:

1. A heat exchanger for motor vehicles comprising:

(a) a plurality of flat tubes through which a fluid cooling medium can flow;

(b) elongated vortex generators in the form of indentations pointing inward on at least one flat face of said flat tubes, and

(i) wherein the ratio between a height, h, of the vortex generators and a height, H, of the flat tubes is approximately 0.05 to 0.5;

(ii) wherein a longitudinal axes of the vortex generators are inclined at angles of approximately 10° to 40° with respect to the tube longitudinal axis; and

(iii) wherein vortex generators which are adjacent transversely with respect to the tube longitudinal axis are inclined in opposite directions; and

(c) corrugated fins to which environmental air or other media can be applied operably linked to said flat tubes.

2. The heat exchanger as claimed in claim 1, wherein the ratio between the height, h, of the vortex generators and the height, H, of the flat tubes is approximately 0.05 to 0.25.

3. The heat exchanger as claimed in claim 1, wherein the ratio between the height, h, of the vortex generators and the height, H, of the flat tubes is approximately 0.25 to 0.5.

4. The heat exchanger as claimed in claim 1, wherein the vortex generators are arranged in vortex generator rows of at least three vortex generators and wherein said rows run transversely with respect to the tube longitudinal axis and essentially in straight lines.

5. The heat exchanger as claimed in claim 1, wherein a plurality of vortex generator rows are arranged one behind the other, in a straight line, in the direction of the tube longitudinal axis.

6. The heat exchanger as claimed in claim 5, wherein the ratio of (i) the distance, C, between the vortex generator rows in the direction of the tube longitudinal axis to (ii) the length, L, of the vortex generators is about 1 to 10.

7. The heat exchanger as claimed in claim 1, wherein the ratio of (i) the transverse distance, b, between the vortex generators with respect to (ii) the tube longitudinal axis to the length, L, of the vortex generators is approximately 0.1 to 0.9.

8. The heat exchanger as claimed in claim 1, wherein the vortex generators are arranged on both flat faces of the flat tubes, and respective vortex generator rows on the first flat face and on the second flat face are arranged offset with respect to one another in the direction of the tube longitudinal axis.

9. The heat exchanger as claimed in claim 6, wherein the ratio of (i) the distance, a, between the first flat face and the second flat

face of the vortex generator rows in the direction of the tube longitudinal axis to (ii) the height, h, of the vortex generators is approximately 10 to 30.

10. The heat exchanger as claimed in claim 8, wherein the vortex generator rows are arranged offset at an angle, β, of approximately 10° to 30°.

11. The heat exchanger as claimed in claim 1, wherein the flat tubes are beaded tubes, with a bead running parallel to the tube longitudinal axis.

12. The heat exchanger as claimed in claim 1, wherein the height of the vortex generators is 10% to 80% of half the height, H, of the flat tubes.

13. A heat exchanger for motor vehicles comprising:

(a) a plurality of flat tubes through which a liquid cooling medium can flow;

(b) vortex generators for breaking up a boundary layer of a flow of said liquid cooling medium and ensuring exchange between layers of said liquid cooling medium; and

(c) corrugated fins to which environmental air or other media can be applied operably linked to said flat tubes.

14. An automotive cooling system for an engine, comprising a cooling loop carrying an engine coolant and communicating

with the engine, and a heat exchanger in the cooling loop, wherein the heat exchanger comprises a heat exchanger according to claim 1.

15. A motor vehicle comprising an engine and a cooling system for the engine, wherein the cooling system comprises a cooling system as defined by claim 14.